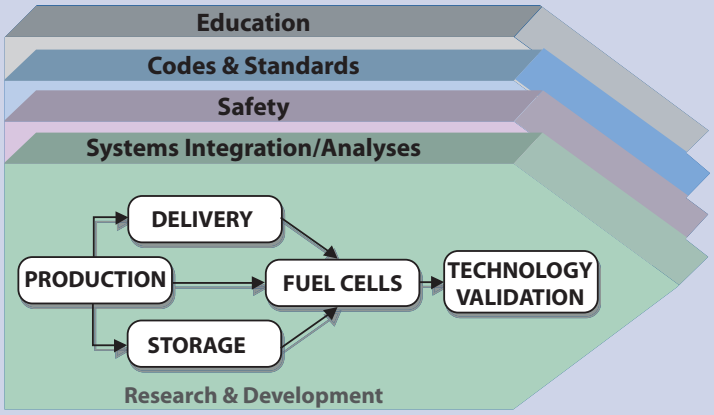
DRAFT (June 3, 2003)

Paving the way
toward a hydrogen
energy future

Hydrogen, Fuel Cells & Infrastructure Technologies Program

Multi-Year Research, Development and Demonstration Plan

Planned program activities for 2003-2010



H2 Economy

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Energy Secretary Spencer Abraham on the Future of Personal Transportation

Hydrogen can fuel much more than cars and light trucks . . . It can also fuel ships, airplanes and trains. It can be used to generate electricity, for heating, and as a fuel for industrial processes . . .

Hydrogen offers the long-term potential for a highly efficient energy system that produces near-zero emissions and is based on domestically available resources. Hydrogen can be produced from fossil, nuclear, and renewable resources, thus encouraging diversity in the nation's energy supplies. It can be produced from abundant fossil fuels such as coal without undesirable CO_2 emissions by the use of carbon management approaches such as sequestration.

The day of the hydrogen economy, while not imminent, is now within sight . . . It promises the kind of transformation not seen since the nineteenth and early twentieth centuries, when the world experienced the last energy revolution.

We in the U.S. government, along with our governmental partners around the world, will work to promote and support cooperation and collaboration. But, as always, we look to the genius of the private sector . . . to bring us a better future.

We are faced with a mammoth task but I can't think of anything that any group of people can do that will have more lasting benefit for more people than working to create an energy-transportation revolution. I'm sure you agree that the challenge we have set for ourselves will have historic consequences—and that it is a privilege to be among those who have the opportunity to contribute in some way to meeting that challenge.

Foreword

This draft of the Hydrogen, Fuel Cells & Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan was prepared for review by the National Research Council's (NRC's) Committee on Alternatives and Strategies for Future Hydrogen Production and Use. This Committee was formed as part of a larger project initiated at the request of the Department of Energy (DOE) by the NRC's Board on Energy and Environmental Systems of the National Academy of Engineering Program Office. The purpose of the project is to evaluate the cost and status of technologies for production, transportation, storage, and end-use of hydrogen and to review DOE's hydrogen research, development, and deployment (RD&D) strategy. This review will ensure that the activities describe in this plan incorporate all of the committee's recommendations, which address:

- A systems analysis approach to hydrogen energy RD&D
- Exploratory research as the foundation for breakthroughs in technology
- Safety issues
- Coordination of R&D strategy programs.

Specifically, systems analysis is addressed in Section 4.0, Program Management. The Program will define technical priorities based both on market needs as well as detailed trade-off analyses between system requirements and component performance and costs. Directions identified through systems analysis will be pursued through coordinated R&D projects, and interaction with the Office of Science will enhance exploratory research. Additionally, in response to comments from the NRC Committee, a top-down approach for systematically incorporating safety into every aspect of the Program has been developed, and is described in Section 3.7.

This document is a work in progress and a number of outstanding issues had not yet been resolved at the time of printing. These will all be addressed in the final version of the document. Interested stakeholders can download a copy of this document and submit comments via the Program Web site at http://www.eere.energy.gov/hydrogenandfuelcells/mypp/. Comments on the draft document will be collected, reviewed, and incorporated as appropriate. A final version of the document is tentatively scheduled for release in October 2003.

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